

REMARKS

Applicant thanks the Examiner, Mr. Wimer, for his courtesy and assistance during an interview conducted March 31, 2004. As indicated in the Interview Summary, during the interview, counsel and the Examiner considered a proposed amendment to the claims, including in particular, independent Claims 3, 5, 27 and 33. Following the discussion, it was agreed that these claims as revised in the proposed amendment define over the prior art of record. By the foregoing amendment, Applicant has adopted the changes discussed during the interview, with the single exception that the word "at" preceding "structural" in the second paragraph of the body of Claim 3 has been changed to "in", as also discussed during the interview.

Claim 3 has been rejected under 35 U.S.C. §103(a) as unpatentable over James et al (U.S. Patent No. 5,682,168), while Claim 7 has been rejected as unpatentable over James et al in view of Dörrie et al (U.S. Patent No. 6,177,494). In addition, Claims 5 and 27-37 have been rejected as unpatentable over Dörrie et al in view of James et al, and Claims 2, 4, 9 and 19-21 have been rejected as unpatentable over Hoskins (U.S. Patent No. 2,129,766) in view of James et al. Finally, Claims 6 and 8 have been rejected as unpatentable over Hoskins in view of James et al and further in view of Dörrie et al. For the reasons set forth hereinafter, Applicant respectfully submits that all claims remaining of record in

this application (being Claims 3, 5, 7 and 29-36) distinguish over the cited references, whether considered separately or in combination.

The present invention is directed to an antenna arrangement for a motor vehicle having a number of antennas for different functions, and for operation at different frequencies. In particular, the purpose of the present invention is to permit the incorporation of a large number of antennas into the vehicle and the vehicle body in such a manner that they do not interfere with each other, protrude from the vehicle body or impair its visual or aerodynamic qualities.

In the antenna arrangement according to the invention, a plurality of antennas is incorporated into the outer skin of a vehicle body, which outer skin itself comprises a plurality of body components that are fabricated of sheet metal and joined together. The individual antennas, according to the invention, are formed in gaps in the outer skin of the vehicle. Such gaps are formed in two ways. First, they may be provided in the form of joints or seams which exist between individual sheet metal body components, and second, they may be provided in the form of slots which are formed in the sheet metal from which a particular body component is fabricated. In either case, the antenna formed at such a gap may be covered over by a material which matches the trim and finish of the vehicle body.

The latter features of the invention are recited in the claims which remain of record in this application. In particular, Claim 3 recites that the vehicle outer skin comprises a plurality of body components fabricated of sheet metal, that the antennas are formed at structural gaps in the outer skin, and that the structural gap at which at least one antenna is arranged comprises a joint "at which individual components of the vehicle outer skin adjoin one another". Claim 5 is similar, except that the gap is formed by a slot in the sheet metal itself, of which a particular body component is formed. Moreover, the slot is "dimensioned in such a way that the slot itself forms a slot antenna". Each of the remaining claims of record incorporates one or both of these limitations, neither of which is found in any of the cited references. Finally, new Claim 38 depends from Claim 3, and further recites that paneling members mounted on the vehicle skin cover the gaps formed in the outer skin. The paneling members are separate from the antennas themselves, and are made of either a dielectric material, an insulator or a material which is permeable to electromagnetic radiation.

The James et al reference in particular shows a plurality of antennas 70 and 108,109 which are mounted within the roof support members, such as 74, as best shown in Figures 2 and 3. Figure 2, for example, shows in particular that the antenna in question consists of a half wave dipole antenna 72 that is mounted inside one of such supports, and is covered with a non-conducting antenna cover 84. In another embodiment, illustrated in Figure 15, the antenna

system according to James et al includes five quarter-wave whip antennas 244-252 suspended from the automobile roof. Nowhere, however, does James et al teach or suggest providing antennas formed at structural gaps in the vehicle outer skin, with the gaps comprising either a joint at which individual sheet metal components of the vehicle outer skin adjoin one another, or a slot formed through the sheet metal of a particular body component, as recited in the claims of the present application.

With regard to Claim 3 in particular, during the interview, counsel and the Examiner discussed the proposition that the supporting member 74 in Figure 2 of James et al can not reasonably be characterized as "a joint at which individual components of the vehicle outer skin adjoin one another". That is, while it may be conceded, for the sake of discussion, that the roof support 74 might be characterized as a "joining" member, it does not constitute a "joint", and the individual components of the vehicle outer skin in question (in this case, the roof and the hood) do not "adjoin one another" at any such "joint". Accordingly, as noted previously, it was concluded that Claim 3 as amended appears to distinguish over the James et al reference.

The Dörrie et al patent, on the other hand, discloses a vehicular antenna system in which a plurality of separate slot antenna units are mounted at various locations about the vehicle body, and are insulated from it. Figure 1, for

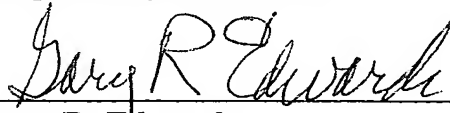
example, shows three such slot antenna units or elements 12-14 mounted on the body of the vehicle (or within it). (See Column 1, lines 37-57; Column 2, lines 8-26.) As is apparent from Figures 1-4, each of the respective slot antennas 12 (Figure 2) is formed separately and mounted either on or within the interior of the vehicle body. Accordingly, Dörrie et al also fails to teach or suggest an antenna system such as described in the claims of the present application, in which the antennas are formed either in joints between individual fabricated sheet metal components of the body, or by slots which are actually formed in the sheet metal of an individual body component itself.

Finally, the Hoskins reference discloses a radio antenna system for an automobile in which the antenna is provided in the form of a "screen sheet aerial" which is mounted between the vehicle radiator 4 and the decorative grill 5 in one embodiment (Figures 1 and 2) and is mounted to follow the transverse exterior contour of the radiator grill in a second embodiment (Figures 3 and 4). Like James et al and Dörrie et al, therefore, the Hoskins reference also fails to teach or suggest the antenna arrangement as defined in the claims of the present application. It is also noteworthy that the grill itself in Hoskins is metallic and does not therefore constitute an insulator, a dielectric material or a material that is permeable to electromagnetic radiation.

In light of the foregoing remarks, this application should be in condition for allowance, and early passage of this case to issue is respectfully requested. If there are any questions regarding this amendment or the application in general, a telephone call to the undersigned would be appreciated since this should expedite the prosecution of the application for all concerned.

If necessary to effect a timely response, this paper should be considered as a petition for an Extension of Time sufficient to effect a timely response, and please charge any deficiency in fees or credit any overpayments to Deposit Account No. 05-1323 (Docket #225/50993).

Respectfully submitted,



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